	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	4315	(barrier adj layer) near10 substrate	USPAT	2002/07/26 08:31
2	BRS	L2	1138	1 and (metal adj layer)	USPAT	2002/07/26 08:31
3	BRS	L4	1	2 and organosilicate	USPAT	2002/07/26 08:34
4	BRS	L6	1	(first adj organosilicate) and (second adj organosilicate)	USPAT	2002/07/26 08:41
5	IS&R	L7	187	(438/689).CCLS.	USPAT	2002/07/26 08:42

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	IS&R	L1	252	(438/695).CCLS.	USPAT	2002/07/26 10:54
2	IS&R	L2	237	(438/634).CCLS.	USPAT	2002/07/26 11:07
3	IS&R	L3	190	(438/584).CCLS.	USPAT	2002/07/26 11:07
4	BRS	L5	3	(organosilicate near10 (silicon adj3 oxide))	USPAT	2002/07/26 11:33
5	BRS	L7	25	OGS	USPAT	2002/07/26 11:29
6	BRS	L8	180	(etch adj3 stop adj3 layer) near10 (silicon adj oxide)	USPAT	2002/07/26 11:43

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	IS&R	L1	252	(438/695).CCLS.	USPAT	2002/07/26 10:54
2	IS&R	L2	237	(438/634).CCLS.	USPAT	2002/07/26 11:07
3	IS&R	L3	190	(438/584).CCLS.	USPAT	2002/07/26 11:07

US-PAT-NO: 6177147

DOCUMENT-IDENTIFIER: US 6177147 B1

TITLE: Process and apparatus for treating a substrate

---------- KWIC ---------

In the etching, which is one of the process technologies, there exist various dry etching technologies for processing a semiconductive substrate or a thin film deposited on the substrate through the steps of using a halogen-containing gas under low pressure or high vacuum and exciting this halogen-containing gas by some means. As for this example, there has been known a process of exciting a halogen gas by exposing to plasma, or by the irradiation of an electron beam, an ion beam or a light. Especially, the etching by exposing to plasma has been widely applied since it is highly practicable. Recently, there have been put into practice high-density plasma etching technologies of applying ECR (Electron Cyclotron Resonance) type of plasma, ICP (Induction-Coupled Plasma), or a plasma method (hereinafter referred as to "UHF plasma") generated in the course of **electric** discharge caused by applying an **electric** field of high frequency ranging in VHF to UHF bands, that is, nearly from 100 to 1,000 MHz and the like in addition to parallel-plate type of plasma etching technology.
In these etching technologies, using a halogen-containing gas such as **fluorocarbon** (CF.sub.4, C.sub.4 F.sub.8 and the like) makes it possible to etch a semiconductive material including silicon (Si) and the like, insulating material including silicon oxide (SiO.sub.2), silicon nitride (SiN) and the

like, and a metallic material including aluminum and the like, or to remove selectively one of these materials by etching. Accordingly, this type of halogen-containing gas is indispensable for forming a fine pattern on the substrate.

Example of depositing an a-C:F film on a substrate with a UHF plasma excitation means will be explained below. The UHF plasma excitation means used in this example is illustrated in FIG. 3. In this example, an **RF** electric power supply is not connected to the substrate holder. Namely, this example is different from Example 2 in this point of applying no **RF** bias voltage.

US-PAT-NO: 6299724

DOCUMENT-IDENTIFIER: US 6299724 B1

TITLE: Direct vapor delivery of enabling chemical for enhanced HF etch process performance

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The process and direct enabling chemical delivery apparatus of the invention may be employed advantageously over a wide range of process parameters. For example, for a **silicon oxide etch using HF and an enabling chemical of ROH (where R is H or alkoxy), process pressure** may be varied over the range of 1 torr to 1 atm, with a range of from about 10 to about 500 torr being preferred; total gas flow may range from 200 sccm to 5000 sccm; the gas mixture ratio may be varied from 0 to 100% enabling chemical, 0 to 100% HF, and 0-100% carrier gas; the process time may be varied from 1 sec up to tens of minutes, depending on amount of material to be removed and the other process parameters selected; and the process **temperature** may range from about 20 to about 100.degree. C.